

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment,

the digital circuit multiplication equipment comprising:

means for transmitting (notifying) number of a trunk channel operated under pass-through operation to the another digital circuit multiplication equipment connected via a bearer circuit;~~and~~

means for continuously assigning a bearer circuit with respect to the trunk channel operated under pass-through operation;~~such that the bearer circuit continues to be operated as a sound channel regardless of whether sound is present on the trunk channel~~

means for embedding information indicative of an encoding rate of an encoded speech signal from the bearer circuit into a signal which is outputted with respect to a trunk channel operated under pass-through operation;

means for detecting the information indicative of said encoding rate from the input signal of the trunk channel operated under pass-through operation;

means for determining an assignment of said trunk channel to the bearer circuit by using

said encoding rate detected from the input signal of the trunk channel operated under pass-through operation; and

means for delaying the encoded signal contained in the input signal of the trunk channel in such a case that when the encoding rate of the encoded speech signal contained in the input signal of the trunk channel operated under pass-through operation is transmitted, the assignment rate change of said trunk channel to the bearer circuit is delayed, and for starting to output the delayed encoded signal after the bearer circuit has been assigned.

2. (Currently Amended) In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment, the digital circuit multiplication equipment comprising:

means for transmitting (notifying) number of a trunk channel operated under pass-through operation to the another digital circuit multiplication equipment connected via a bearer circuit; and

means for continuously assigning a bearer circuit with respect to the trunk channel operated under pass-through operation such that the bearer circuit continues to be operated as a sound channel regardless of whether sound is present on the trunk channel;

said means for transmitting (notifying) the number of said trunk channel operated under pass-through operation to another digital circuit multiplication equipment connected via the bearer circuit, ~~transmits (notifies)~~ transmitting (notifying) the number of said trunk channel being

operated under pass-through operation by employing a specific bearer channel number contained in an assignment message of a bearer circuit.

3. (Cancelled)

4. (Currently Amended) In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment, the digital circuit multiplication equipment comprising:

means for embedding information into a signal which is outputted using the trunk channel under pass-through operation, said information indicating as to whether or not a encoded speech signal derived from a bearer circuit is present;

means for detecting from an input signal of a trunk channel operated under pass-through operation, information indicating as to whether or not said encoded speech signal derived from said bearer circuit is present;

means for outputting a first invalid encoded signal indicative of being equal to an invalid encoded signal with respect to the bearer circuit in such a case that the encoded speech signal derived from the bearer circuit is not contained in the input signal of the trunk channel operated under the pass-through operation;

a speech decoding device for outputting only a signal different from said first invalid encoded signal; and

means for outputting a silent PCM signal in a trunk channel which receives said first

invalid encoded signal from the bearer circuit;

means for determining an assignment of the trunk channel operated under pass-through operation to the bearer circuit by employing such information for indicating as to whether or not a encoded speech signal derived from the bearer circuit is present in the input signal of the trunk channel; and

means for delaying a encoded signal contained in an input signal of a trunk channel in such a case that when a state under which the encoded speech signal is not present from the bearer circuit contained in the input signal of the trunk channel operated under pass-through operation is transmitted to another state under which the encoded speech signal is present, the assignment of said trunk channel to the bearer circuit is delayed, and for starting to output said delayed encoded signal after the trunk channel has been assigned to the bearer circuit.

5. (Currently Amended) In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through-transmitting a signal, using a trunk channel, connected via an exchange,

the digital circuit multiplication equipment comprising:

means for synthesizing a first invalid encoded signal which indicates that in a trunk channel operated under pass-through operation, where an input signal from a bearer circuit is not supplied, a encoded signal thereof is invalid with an output signal of said trunk channel;

a speech decoding device for outputting only a signal different from a signal for indicating that the encoded signal is invalid with respect to said bearer circuit; and

means for outputting a silent PCM signal in a trunk channel ~~for~~ in response to receiving

said first invalid encoded signal from the bearer circuit.

6. (Canceled)

7. (Currently amended) ~~A digital circuit multiplication equipment as claimed in claim 4,~~
~~wherein:~~ In a digital circuit multiplication equipment equipped with a tandem pass-through
function capable of pass-through transmitting a signal, using a trunk channel, connected via an
exchange to another digital circuit multiplication equipment, the digital circuit multiplication
equipment comprising:

means for embedding information into a signal which is outputted using the trunk
channel under pass-through operation, said information indicating as to whether or not a encoded
speech signal derived from a bearer circuit is present;

means for detecting from an input signal of a trunk channel operated under pass-through
operation, information indicating as to whether or not said encoded speech signal derived from
said bearer circuit is present;

means for outputting a first invalid encoded signal indicative of being equal to an invalid
encoded signal with respect to the bearer circuit in such a case that the encoded speech signal
derived from the bearer circuit is not contained in the input signal of the trunk channel operated
under the pass-through operation;

a speech decoding device for outputting only a signal different from said first invalid
encoded signal;

means for outputting a silent PCM signal in a trunk channel which receives said first invalid encoded signal from the bearer circuit;

~~said digital circuit multiplication equipment is further comprised of:~~

means for outputting encoded speech signals which correspond to plural frames and have been inputted from the bearer circuit in the past with respect to the trunk channel operated under pass-through operation;

means for extracting said encoded speech signal corresponding to the plural frames from the input signal of the trunk channel operated under pass-through operation; and

means for outputting old encoded speech signals by the delayed assignment number from the encoded speech signals corresponding to the plural frames, which are extracted from the input signal of said trunk channel in such a case that when a state under which the encoded speech signal is not present from the bearer circuit contained in the input signal of the trunk channel operated under pass-through operation is transmitted to another state under which the encoded speech signal is present, the assignment of said trunk channel to the bearer circuit is delayed, and for starting to output said delayed encoded signal after the trunk channel has been assigned to the bearer circuit.

8. (Canceled)

9. (Currently amended) A digital circuit multiplication equipment as claimed in claim [[8]] 1, wherein:

said digital circuit multiplication equipment is further comprised of:

means for outputting a second invalid encoded signal to the bearer circuit until the assignment rate to the bearer circuit is changed, said second invalid encoded signal indicating that said signal is an invalid encoded speech signal, in such a case that when the encoding rate of the encoded speech signal contained in the input signal of the trunk channel operated under pass-through operation is transmitted, the assignment rate change of said trunk channel to the bearer circuit is delayed;

a speech-decoding device for outputting only such a signal different from both said first invalid encoded signal and said second invalid encoded signal; and

means for outputting a silent PCM signal in the case that said first invalid encoded signal is entered from the bearer circuit, and also for outputting a prediction PCM signal for predicting a PCM signal which should be subsequently outputted in such a case that said second invalid encoded signal is inputted.

10. (Currently Amended) ~~A digital circuit multiplication equipment as claimed in claim 4, wherein:~~ In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment, the digital circuit multiplication equipment comprising:

means for embedding information into a signal which is outputted using the trunk channel under pass-through operation, said information indicating as to whether or not a encoded speech signal derived from a bearer circuit is present;

means for detecting from an input signal of a trunk channel operated under pass-through operation, information indicating as to whether or not said encoded speech signal derived from said bearer circuit is present;

means for outputting a first invalid encoded signal indicative of being equal to an invalid encoded signal with respect to the bearer circuit in such a case that the encoded speech signal derived from the bearer circuit is not contained in the input signal of the trunk channel operated under the pass-through operation;

a speech decoding device for outputting only a signal different from said first invalid encoded signal;

means for outputting a silent PCM signal in a trunk channel which receives said first invalid encoded signal from the bearer circuit;

~~said digital circuit multiplication equipment is further comprised of:~~

means for embedding information indicative of a encoding rate of a encoded speech signal from the bearer circuit into a signal which is outputted with respect to a trunk channel operated under pass-through operation;

means for detecting the information indicative of said encoding rate from the input signal of the trunk channel operated under pass-through operation;

means for determining an assignment of said trunk channel to the bearer circuit by using said encoding rate detected from the input signal of the trunk channel operated under pass-through operation;

means for delaying the encoded signal contained in the input signal of the trunk channel in such a case that when the encoding rate of the encoded speech signal contained in the input

signal of the trunk channel operated under pass-through operation, is transmitted from a high rate to a low rate, the assignment rate change of said trunk channel to the bearer circuit is delayed, and for starting to output the delayed encoded signal after the bearer circuit has been assigned.

means for outputting a second invalid encoded signal to the bearer circuit until the assignment rate to the bearer circuit is changed, said second invalid encoded signal indicating that said signal is an invalid encoded speech signal, in such a case that when the encoding rate of the encoded speech signal contained in the input signal of the trunk channel operated under pass-through operation is transmitted from the high rate to the low rate, the assignment rate change of said trunk channel to the bearer circuit is delayed;

means for synthesizing the encoded signal contained in the input signal of said trunk channel with such information for indicating such a fact that the encoded signal of the low encoding rate is contained in the case that when the encoding rate of the encoded speech signal contained in the input signal of the trunk channel operated under pass-through operation, the assignment rate change of said trunk channel to the bearer circuit is delayed, and then for outputting the synthesized encoded signal to the bearer circuit;

a speech decoding device for outputting only such a signal different from both said first invalid encoded signal and said second invalid encoded signal; and

means for outputting a silent PCM signal in the case that said first invalid encoded signal is entered from the bearer circuit, and for outputting a prediction PCM signal for predicting a PCM signal which would be subsequently outputted in such a case that said second invalid encoded signal is inputted; and further for extracting the encoded signal of the low rate to be decoded into a PCM signal in such a case that such a signal is inputted in which said encoded

signal of the low rate is synthesized with the information for indicating that the encoded signal of the low rate is contained.

11. (Currently amended) ~~A digital circuit multiplication equipment as claimed in claim 4, wherein:~~ In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment,

the digital circuit multiplication equipment comprising:

means for embedding information into a signal which is outputted using the trunk channel under pass-through operation, said information indicating as to whether or not a encoded speech signal derived from a bearer circuit is present;

means for detecting from an input signal of a trunk channel operated under pass-through operation, information indicating as to whether or not said encoded speech signal derived from said bearer circuit is present;

means for outputting a first invalid encoded signal indicative of being equal to an invalid encoded signal with respect to the bearer circuit in such a case that the encoded speech signal derived from the bearer circuit is not contained in the input signal of the trunk channel operated under the pass-through operation;

a speech decoding device for outputting only a signal different from said first invalid encoded signal;

means for outputting a silent PCM signal in a trunk channel which receives said first invalid encoded signal from the bearer circuit;

wherein, when a speech encoding system corresponds to the ADPCM system defined in the ITU-T recommendation G.726, a encoded signal which is not defined by said ITU-T recommendation and contains such encodes, all of which for 1 sample are equal to "1", is used as said first invalid encoded signal.

12. (Currently amended) ~~A digital circuit multiplication equipment as claimed in claim 4, wherein:~~ In a digital circuit multiplication equipment equipped with a tandem pass-through function capable of pass-through transmitting a signal, using a trunk channel, connected via an exchange to another digital circuit multiplication equipment, the digital circuit multiplication equipment comprising:

means for embedding information into a signal which is outputted using the trunk channel under pass-through operation, said information indicating as to whether or not a encoded speech signal derived from a bearer circuit is present;

means for detecting from an input signal of a trunk channel operated under pass-through operation, information indicating as to whether or not said encoded speech signal derived from said bearer circuit is present;

means for outputting a first invalid encoded signal indicative of being equal to an invalid encoded signal with respect to the bearer circuit in such a case that the encoded speech signal derived from the bearer circuit is not contained in the input signal of the trunk channel operated under the pass-through operation;

a speech decoding device for outputting only a signal different from said first invalid encoded signal; means for outputting a silent PCM signal in a trunk channel which receives said

first invalid encoded signal from the bearer circuit;

wherein, when a speech encoding system corresponds to the CELP system, a encoded signal containing a vector is used as said first invalid encoded signal, the use frequency of which vector being low when a speech signal is inputted into the encoding device.

13. (Original) A digital circuit multiplication equipment as claimed in claim 9, wherein:

when a speech encoding system corresponds to the ADPCM system defined in the ITU-T recommendation G.726, a encoded signal which is not defined by said ITU-T recommendation and contains such encodes, all of which for 1 sample are equal to "1", is used as said second invalid encoded signal.

14. (Original) A digital circuit multiplication equipment as claimed in claim 9, wherein:

when a speech encoding system corresponds to the CELP system, a encoded signal containing a vector is used as said second invalid encoded signal, the use frequency of which vector being low when a speech signal is inputted into the encoding device.

15. (Currently Amended) A communications apparatus, comprising:

a transmission device for continuously receiving a signal from an input trunk indicated by a first trunk number;

said transmission device including a unit for continuously assigning said signal to a bearer channel to transmit said signal to connect with a second trunk number of another transmission device via an exchange such that the bearer channel continues to be operated as a

sound channel regardless of whether sound is present on said signal, said unit indicating to the another transmission device of the continuous assignment of the bearer channel using an assignment message.

16. (Canceled)

17. (Currently Amended) A method for communicating, comprising:

continuously receiving a signal at a transmission device from an input trunk indicated by a first trunk number;

continuously assigning said signal to a bearer channel to transmit said signal to connect with a second trunk number of another transmission device via an exchange such that the bearer channel continues to be operated as a sound channel regardless of whether sound is present on said signal, wherein said continuously assigning including indicating to the another transmission device of the continuous assignment of the bearer channel using an assignment message.

18. (Canceled)